Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original): A method of determining at least one parameter of a radiating source, based on a plurality of spatial positions of an antenna array and relational phases between signals generated by the radiating source in first and second antenna elements of the antenna array at said plurality of spatial positions, the method comprising the steps of:

for each potential value of said at least one parameter, predicting a set of corresponding spatial positions and relational phases;

moving the antenna array through said plurality of spatial positions;

while moving the antenna array, measuring actual relational phases at each of said plurality of spatial positions to generate a set of measured spatial positions and relational phases;

comparing the measured set with each of the predicted sets to find a best-matching predicted set; and

determining an actual value of said at least one parameter based on the best-matching predicted set.

2. (original): The method of claim 1, further comprising the step of reporting presence of said radiating source upon detecting a predicted set satisfying a best-matching condition.

3. (original): The method of claim 2, further comprising the step of reporting presence of multiple radiating sources upon detecting multiple predicted sets satisfying the best-match condition.

4. (original): The method of claim 1, wherein the antenna array rotates through said plurality of spatial positions with a boresight direction of the antenna array remaining coplanar and sweeping out an angular arc during said rotating.

5. (original): The method of claim 1, wherein the antenna array rotates through said plurality of spatial positions with a boresight direction of the antenna array sweeping out a conical surface during said rotating.

6. (original): A method of determining a parameter of at least one radiating source using an antenna array having first and second antenna elements, comprising the steps of:

a) when the antenna array is set at a particular angular position, predicting, for each potential value of said parameter, a relational phase that would be generated between signals induced by any of said at least one radiating source in the first and second antenna elements;

b) storing the predicted relational phases in a plurality of memory cells each being associated with a potential value of said parameter;

c) starting from a beginning angular position, rotating the antenna array for an angular interval;

d) shifting contents of the memory cells corresponding to said angular interval;

e) measuring an actual relational phase between signals induced in the first and second antenna elements;

f) matching the actual relational phase with the content of each of the memory cells;

g) repeating steps (c), (d), (e), and (f) while accumulating a number of matches for each of the memory cells, until the antenna array has reached an ending angular positions;

h) evaluating the number of matches of each of the memory cells against a criterion; and

i) outputting the potential value or values associated with those of the memory cells that satisfies the criterion as actual value or values of said parameter of said at least one radiating source.

7. (original): The method of claim 6, wherein said parameter comprises an azimuth angle of a direction of propagation of radiation, transmitted by said at least one radiating source toward the antenna array, with respect to an azimuth plane of the antenna array.

8. (original): The method of claim 7, wherein the first and second antenna elements are located and rotated in the azimuth plane.

9. (original): The method of claim 7, further comprising the step of determining either of a radiation frequency of said at least one radiating source and an elevation angle of the direction of propagation with respect to the azimuth plane of the antenna array.

10. (original): The method of claim 5, wherein the beginning and ending angular positions spaced from about 60 to about 90 degrees.

11. (original): The method of claim 5, wherein said at least one radiating source is swept over by the antenna array during the movement thereof from the beginning angular position to the ending angular position.

12. (original): The method of claim 5, wherein said particular angular position is a zero degree position.

13-33. (canceled)